

In the Claims:

Claim 1 is amended herein. The remaining claims are not amended in this response.

1. (currently amended) A rapid cycle pressure swing adsorption oxygen concentration method comprising:

(a) preparing a mechanical valve comprising at least one cam-actuated flow control valve and a valve actuator having a rotating shaft and a cam corresponding to each respective one of the at least one cam-actuated flow control valve;

(b) interconnecting the cam with the rotating shaft;

(c) preparing a sieve tank having at least one molecular sieve bed filled with molecular sieve materials;

(d) mounting the mechanical valve on the sieve tank to make the at least one cam-actuated flow control valve selectively switch an airflow direction of air for the at least one molecular sieve bed as the at least one cam-actuated flow control valve is actuated;

(e) rotating the rotating shaft thereby the cam actuates the corresponding one of the at least one cam-actuated flow control valve and makes the corresponding molecular sieve bed switching among an adsorption phase, a balance phase and a desorption phase in the at least one sieve bed; and

(f) separating oxygen from the air incoming into the at least one sieve bed with the adsorption phase, the balance phase and the desorption phase.

2. (original) The method as claimed in claim 1, wherein the at least one cam-actuated flow control valve is a 2-position, 2-way air pilot directional flow control valve.

3. (original) A rapid cycle pressure swing adsorption oxygen concentrator comprising

a sieve tank having

    a first molecular sieve bed filled with molecular sieve materials;

    a second molecular sieve bed filled with molecular sieve materials; and

    an oxygen storage bed communicating with both the first and the second molecular sieve beds and having a concentrated oxygen outlet tubing; and

    a mechanical valve mounted on the sieve tank and comprising

        a mounting bracket mounted on the sieve tank and having an inner space, an intake air entrance adapted to connect to a compressed air source and an exhausting exit;

    a valve actuator mounted on the mounting bracket and comprising

        a motor mounted on the mounting bracket;

a rotating shaft mounted in the inner space of the mounting bracket and being rotated by the motor;

five cams mounted on the rotating shaft and rotated by the rotating shaft; and

five cam-actuated valves mounted in the inner space of the mounting bracket, corresponding respectively to the five cams and comprising a first valve interconnecting the first molecular sieve bed with the exhausting exit, a second valve interconnecting the intake air entrance with the first molecular sieve bed, a third valve interconnecting the first molecular sieve bed with the second molecular sieve bed, a fourth valve interconnecting the intake air entrance with the second molecular sieve bed and a fifth valve interconnecting the second molecular sieve bed with the exhausting exit.

4. (original) The rapid cycle pressure swing adsorption oxygen concentrator as claimed in claim 3, wherein the motor is a stepper motor.

5. (original) The rapid cycle pressure swing adsorption oxygen concentrator as claimed in claim 4, wherein each of the cam-actuated flow control valves is a 2-position, 2-way air pilot directional control valve.

6. (original) The rapid cycle pressure swing adsorption oxygen concentrator as claimed in claim 5, wherein the valve

actuator further comprises a covering housing mounted on the mounting bracket to enclose the inner space.